

CLAIMS

What is claimed is:

1. A wireless access gateway for providing a telecommunications link between a base transceiver station (BTS) and a packet switched network, said BTS providing a
5 wireless coverage area for wireless telecommunication with at least one mobile station, said wireless access gateway comprising:

a packet agent in communication with said BTS and with said packet network, said packet agent packetizing frames from said BTS into packets, said packet agent depacketizing packets into frames for said BTS;

10 a coding agent in packet communication with said packet agent, said coding agent transcoding content contained in packets from a first format to a second format;

a radio frequency (RF) manager in packet communication with said packet agent, said RF manager performing RF management of said BTS; and

15 a signaling control agent in packet communication with said packet agent, said signaling control agent controlling said packet agent.

2. The wireless access gateway of claim 1, wherein said coding agent transcodes content from a time division multiplexed (TDM) format to a vocoder format.

20 3. The wireless access gateway of claim 2, wherein said vocoder format is a code excited linear predictive (CELP) vocoder format.

4. The wireless access gateway of claim 2, wherein said vocoder format is a relaxed code excited linear predictive (RCELP) vocoder format.

5. The wireless access gateway of claim 4, wherein said vocoder format is an enhanced variable rate coder (EVRC) format.

6. The wireless access gateway of claim 1, wherein said RF manager performs wireless physical layer functions for said BTS.

10 7. The wireless access gateway of claim 1, wherein said signaling control agent is in packet communication with a session manager.

15 8. The wireless access gateway of claim 7, wherein said signaling control agent controls said packet agent in response to instructions from said session manager.

9. A method for transmitting content from a mobile station to a destination via a packet switched network and a circuit switched network, said method comprising the steps of:

20 receiving, over an air interface, first-format content from said mobile station, said first-format content being said content in a first format;

packetizing said first-format content into at least one packet;

transmitting, via said packet switched network, said at least one packet to a trunk gateway, said trunk gateway being connected to said circuit switched network;

said trunk gateway transcoding said first-format content into second-format content, said second-format content being said content in a second format; and

said trunk gateway transmitting said second-format content to said destination, via said circuit switched network.

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10. The method of claim 9, wherein said second-format content is voice in a time division multiplexed (TDM) format.

11. The method of claim 10, wherein said first-format content is voice in a
10 vocoder format.

12. The method of claim 11, wherein said vocoder format is a code excited linear predictive (CELP) format.

13. The method of claim 11, wherein said vocoder format is a relaxed code
15 excited linear predictive (RCELP) format.

14. The method of claim 13, wherein said vocoder format is an enhanced variable rate coder (EVRC) format.

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15. A method for transmitting content to a mobile station via a packet switched network and a circuit switched network, said method comprising the steps of:

receiving first-format content from said circuit switched network, said first-format content being content in a first format;

5 packetizing said first-format content into at least one first-format packet;

transmitting, via said packet switched network, said at least one first-format packet to a coding agent;

said coding agent transcoding said at least one first-format packet into at least one second-format packet, said at least one second-format packet carrying said content in a
10 second format;

depacketizing said at least one second-format packet to provide second-format content; and

transmitting said second-format content over an air interface to said mobile station.

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16. The method of claim 15, wherein said first-format content is voice in a time division multiplexed (TDM) format.

17. The method of claim 16, wherein second-format content is voice in a vocoder
20 format.

18. The method of claim 17, wherein said vocoder format is a code excited linear predictive (CELP) format.

19. The method of claim 17, wherein said vocoder format is a relaxed code excited linear predictive (RCELP) format.

5 20. The method of claim 19, wherein said vocoder format is an enhanced variable rate coder (EVRC) format.

21. The method of claim 15, further comprising the step of:

10 applying an orthogonal spreading code to said second-format content contained in said at least one second-format packet.

22. A method for using a first wireless access gateway to originate a call from a mobile station via a packet switched network, said first wireless access gateway including a packet agent and a signaling control agent, said method comprising the steps of:

15 receiving, over an air interface, a call origination request from said mobile station;
 a packet agent packetizing said call origination request to provide at least one call origination packet;

 said packet agent transmitting said at least one call origination packet to said signaling control agent;

20 said packet agent receiving at least one instruction packet from said signaling control agent, said at least one instruction packet instructing said packet agent to transmit packets containing content from said mobile station to a destination address in said packet switched network.

23. The method of claim 22, further comprising the step of:

said signaling control agent transmitting, via said packet switched network, a first query message to a session manager.

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24. The method of claim 23, further comprising the step of:

said signaling control agent receiving, via said packet switched network, a first response message from said session manager.

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25. The method of claim 24, wherein said first response message includes said destination address.

26. The method of claim 25, further comprising the steps of:

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said session manager transmitting, via said packet switched network, a second query message to an application server; and

said session manager receiving, via said packet switched network, a second response message from said application server.

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27. The method of claim 25, wherein said destination address corresponds to a trunk gateway, said trunk gateway being connected to a circuit switched network, said method further comprising the step of:

said session manager sending, via said packet switched network, an instruction message to said trunk gateway.

28. The method of claim 27, further comprising the step of:

said session manager signaling, via a signaling gateway, to set up a circuit
switched communication link through said circuit switched network from said trunk
5 gateway.

29. The method of claim 25, further comprising the step of:

said session manager sending, via said packet switched network, a third query
message to a mobility server; and

10 said session manager receiving, via said packet switched network, a third
response message from said mobility server, wherein said destination address
corresponds to a second wireless access gateway.

30. A method for setting up a call to a mobile station via a circuit switched
15 network and a packet switched network, said mobile station operating in a wireless
coverage area served by a wireless access gateway, said wireless access gateway
including a packet agent, a coding agent, and a signaling control agent, said method
comprising the steps of:

a session manager receiving, via a signaling gateway, a request from said circuit
20 switched network to terminate a call to said mobile station;

said session manager sending, via said packet switched network, a first instruction
message to a trunk gateway, said trunk gateway being connected to said circuit switched
network, said first instruction message instructing said trunk gateway to transmit packets

containing content from said circuit switched network to a destination address in said packet switched network, said destination address corresponding to said coding agent.

31. The method of claim 30, further comprising the step of:

5 said session manager sending a second instruction message to said signaling control agent, said second instruction message instructing said signaling control agent to control said packet agent to receive packets from said coding agent.

32. The method of claim 31, further comprising the steps of:

10 said session manager sending, via said packet switched network, a first query message to a mobility server; and

 said session manager receiving, via said packet switched network, a first response message from said mobility server.

15 33. The method of claim 32, wherein said first response message includes said destination address.

34. The method of claim 32, further comprising the steps of:

20 said session manager sending, via said packet switched network, a second query message to an application server; and

 said session manager receiving, via said packet switched network, a second response message from said application server.